

# Lyme arthritis in the Hunter Valley

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**ABSTRACT:** We diagnosed the characteristic clinical and laboratory features of Lyme arthritis in a patient resident in the Hunter Valley. This paper discusses the epidemiological implications.

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ERYTHEMA chronicum migrans (ECM) is an unusual skin rash, often preceded by an arthropod bite, and characterised by a round papule that expands peripherally to form a palpable erythematous ring with central clearing. More recently, this rash has been described in an epidemic form in association with an inflammatory joint disease occurring in children and young adults in eastern Connecticut, and called Lyme arthritis after the town in which this disease was first identified.<sup>1</sup>

A seroepidemiological study suggested that immune complexes may contribute to the pathogenesis of this disorder, but, to date, no antigen has been identified.<sup>2</sup> Patients with ECM have been diagnosed in many parts of the world, but Lyme arthritis has only once been described outside the United States.<sup>3</sup> We report a patient who developed Lyme arthritis, associated with circulating immune complexes throughout the active phase of his disease, after an insect bite in the Hunter Valley.

## Clinical record

A 21-year-old labourer working in bushland near Branxton in the lower Hunter Valley was bitten on the leg by an unidentified insect in February, 1980. Subsequently, an erythematous rash spread outwards from a lump at the site of the bite. The edge was well demarcated, and the central erythema faded, giving rise to the typical lesion of ECM. The edge spread up to the mid-thigh region, and mild desquamation followed fading of the rash. A biopsy of the rash showed a perivascular lymphocytic infiltrate. The ECM has run a relapsing course with occasional secondary lesions occurring on the face or the shoulders; the recurrences have become

less frequent and less severe over the 12 months of illness.

In July, 1980, the patient began to show symptoms of a relapsing arthritis, initially with pain and swelling in the left knee. Each episode lasted several days. This was followed by an acute arthritis of the left hip, which also resolved spontaneously over several days. Synovial fluid (3 mL, aspirated) obtained from the left knee contained few cells ( $50 \times 10^6/L$ ), 70% of which were lymphocytes.

In September, 1980, two other complications became evident. The first was a marked behavioural change, accompanied by headaches, memory loss, and urinary retention. Examination revealed no abnormalities, except for a palpable bladder and stiff neck; the cerebrospinal fluid examination showed a raised level of protein (1.24 g/L) with a normal cell count. The EEG and CAT scan revealed no abnormality. A diagnosis of mild, resolving meningoencephalitis was made. Symptoms fluctuated, but resolved over two weeks.

The second complication was an ECG-documented supraventricular tachycardia, without evidence of an atrioventricular block. The results of extensive investigations were either within normal ranges or negative, except for raised levels of immune complexes. No antibody to known arbovirus (Ross River virus, Sindbis virus, Australian encephalitis virus, and Murray Valley encephalitis virus) was detected. Therapy included a course of intravenously administered penicillin early in the disease, and corticosteroids, neither of which appeared to modify the course of the disease.

Immune complexes were detected by means of the modified Clq binding assay with latex particles.<sup>4</sup> Raised levels were detected throughout the active phase of the disease, but not in the absence of a clinical exacerbation.

## Discussion

This patient's clinical course presented the classical features of Lyme arthritis.<sup>5</sup> The patient presented with ECM after an arthropod bite in summer, and the typical

histological characteristics of lymphocytic vasculitis.<sup>6</sup> The rash was followed by an acute oligoarthritis involving large joints of the lower limbs, each episode resolving completely within several days. Transient arrhythmias and conduction defects as well as bizarre neurological symptoms are part of the classic syndrome.<sup>5, 7, 8</sup> All are self-limited, and though they may recur, they do not seem to cause irreversible disease. The natural history of Lyme arthritis has not yet been fully defined, but in our patient, the disease appeared to be following the usual course of a benign relapsing multisystem disease with a tendency towards less frequent and milder episodes with time.<sup>5</sup>

Lyme arthritis tends to be endemic, often occurring in summer clusters, and probably many incomplete forms of the disease are not diagnosed.<sup>2</sup> The aetiological agent is presumably a penicillin-sensitive organism,<sup>9</sup> transmitted by arthropods, most commonly the tick *Ixodes scapularis*. The common tick in the Hunter Valley is *Ixodes holocyclus*; there is no evidence of an increased prevalence of these insects. A tick bite was not identified in our patient, though mosquitoes were prevalent in the area, and this vector has been linked to ECM in Scandinavia.<sup>10</sup>

Six cases of ECM have been diagnosed by Hunter Valley dermatologists over the last 12 months, which indicates that the aetiological agent is well established in the area, and more cases of Lyme arthritis may be expected. Key features, useful in diagnosis, include: (i) ECM; (2) rapid, complete and spontaneous resolution of an oligoarthritis; and (iii) the presence of circulating cryoglobulin and Clq-binding immune complexes.

## References

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